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CUT BLANK / CUT BLANK & COAT

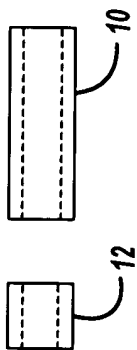


FIG - 1
PRIOR ART

CROP CARRIER END

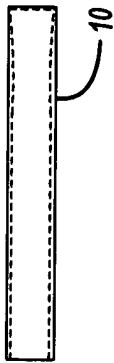


FIG - 4
PRIOR ART

WELD FLANGE

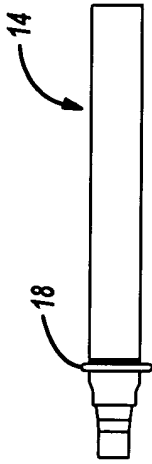


FIG - 7
PRIOR ART

1ST HIT SPDL / EXTRUDE

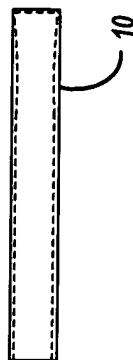


FIG - 2
PRIOR ART

INERTIA WELD

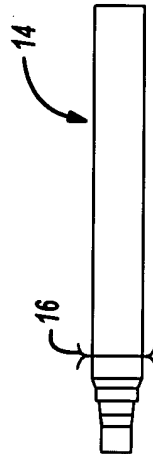


FIG - 5
PRIOR ART

WELD SPRING SEAT

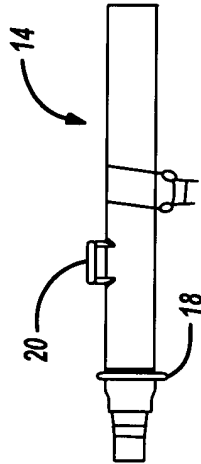


FIG - 8
PRIOR ART

2ND HIT SPDL / CROP SPDL END

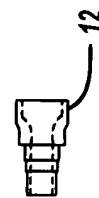


FIG - 3
PRIOR ART

SHEAR RAMS HORN & TEST

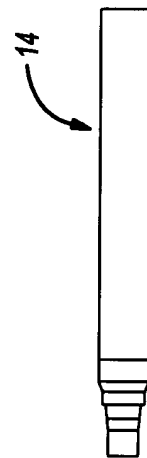


FIG - 6
PRIOR ART

WELD SHOCK

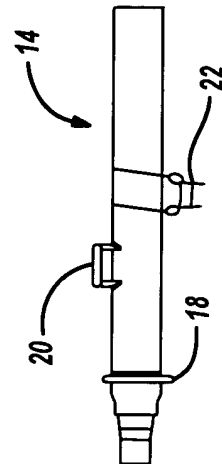
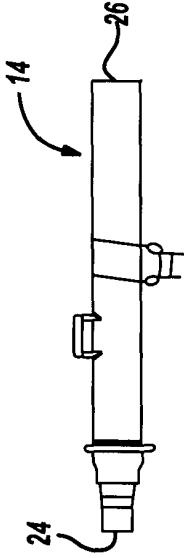


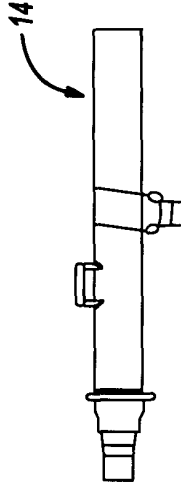
FIG - 9
PRIOR ART

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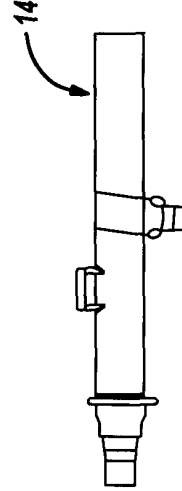
ANGLE HEAD GRIND BEARING & SEAL



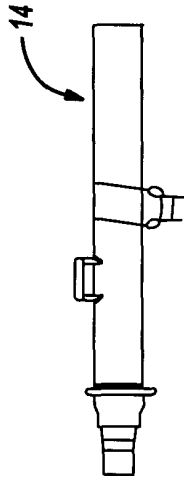
WASH & RUSTPROOF



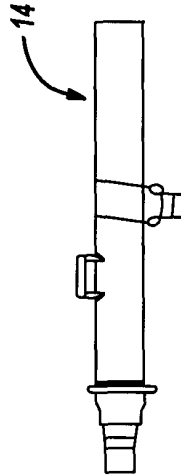
PACK & SHIP



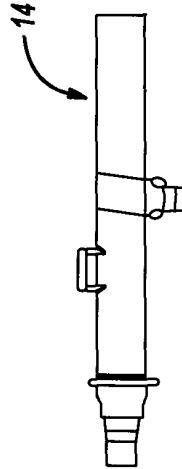
TURN SPINDLE, FLANGE & CARRIE



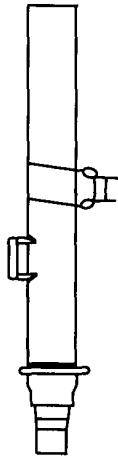
THREAD ROLL, MILL, DRILL



INDUCTION HDN BEARING & SEAL



STRAIGHTEN



FACE & CENTER

FACE & CENTER

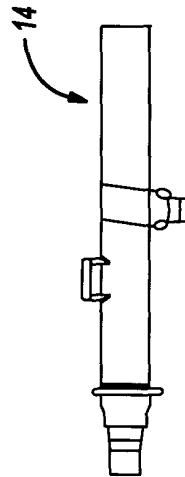


FIG - 11
PRIOR ART

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FIG - 18

PRIOR ART

FORGING

1. Cut thick walled tube into two pieces.
1st section to be used to make the housing body.
2nd section to be used to make the spindle. — 50
2. Extrude 1st section into a variable walled elongated form. — 52
3. Warm form 2nd section in a two stage progression to form the spindle blank. — 54
4. Crop the ends of both the 1st and 2nd sections. — 56
5. Friction weld the 1st and 2nd sections back together to complete the axle tube housing blank. — 58
6. Machine off the "rams horn" resulting from the friction welding process. — 60

WELDING

1. Press a forged weld flange onto the axle tube housing blank and fusion weld in position. — 62
2. Position and locate remaining axle tube brackets (spring seat, shock mount, etc.) — 64
3. Straighten tube. — 66

MACHINING

1. Face spindle end of tube. — 68
2. Center spindle end of tube. — 70
3. Face and center rear end of tube (machining datum line is centerline of tube). — 72
4. Turn spindle. — 74
5. Turn weld flange face. — 76
6. Turn carrier press fit OD at rear end of tube. — 78
7. Roll thread. — 80
8. Drill and de-burr holes in weld flange. — 82
9. Finish grind bearing and seal surface, and cut keyway. — 84
10. Wash, rustproof, package and ship. — 86

FIG - 20

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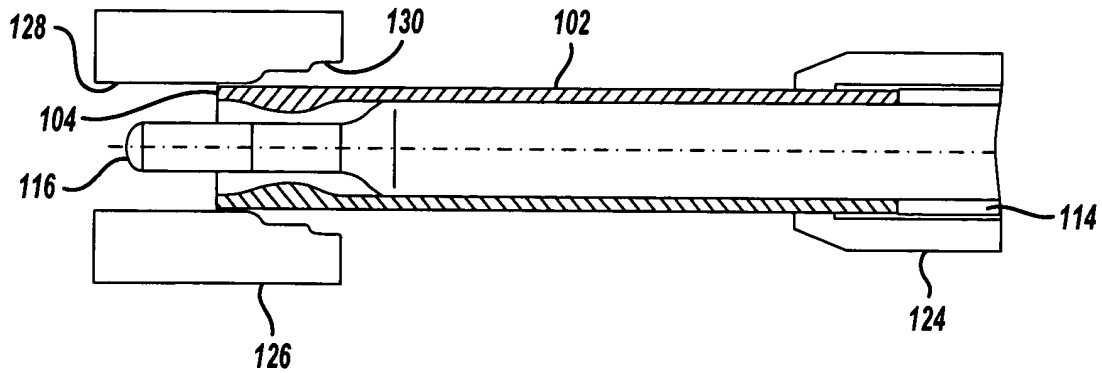


FIG - 21

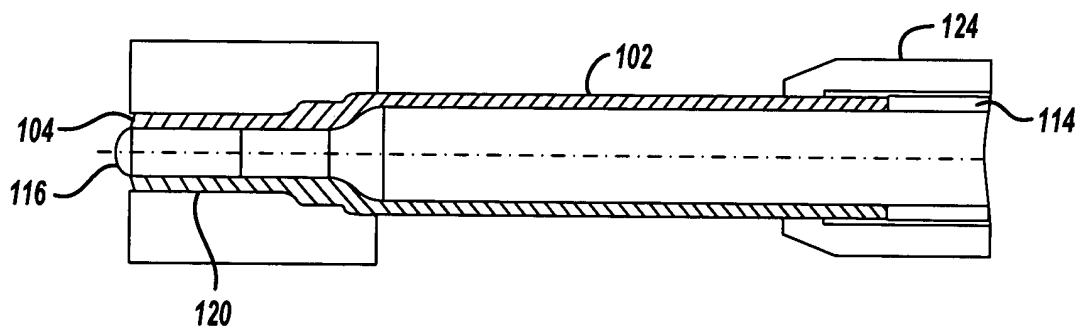


FIG - 22

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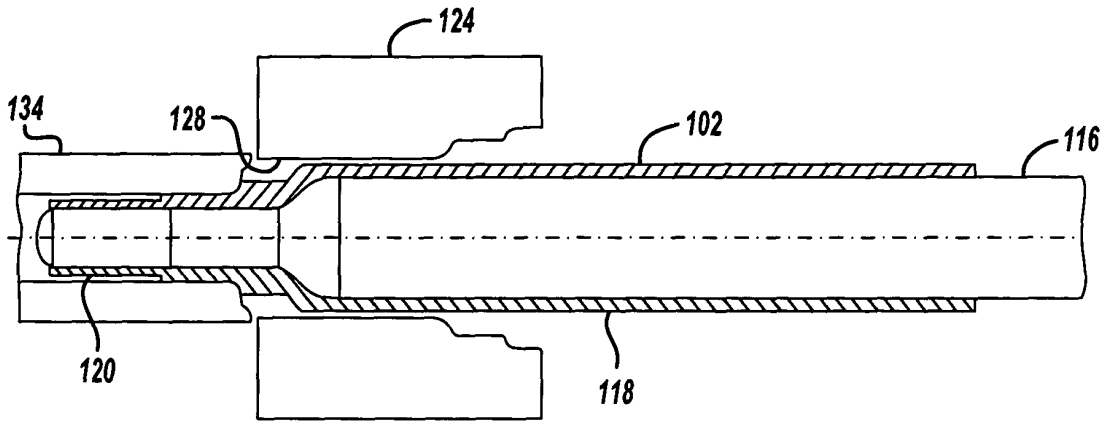


FIG - 23

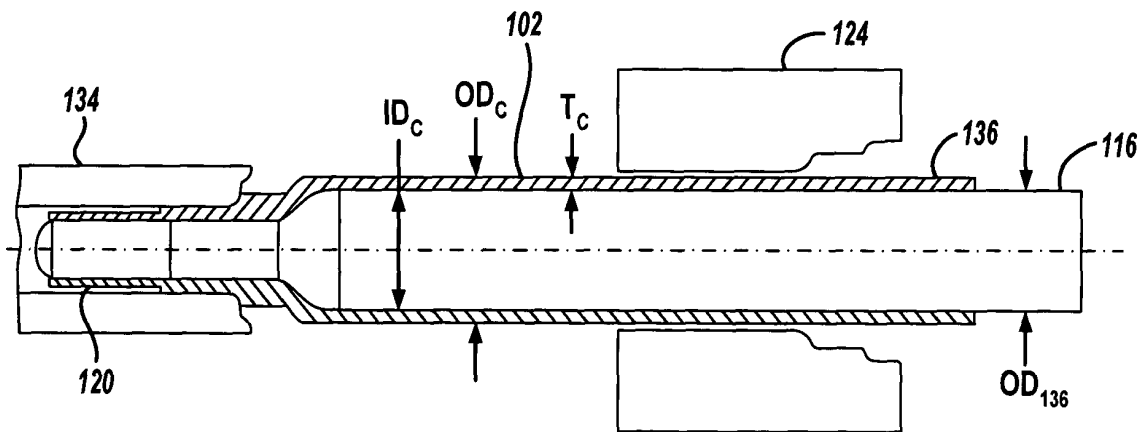


FIG - 24

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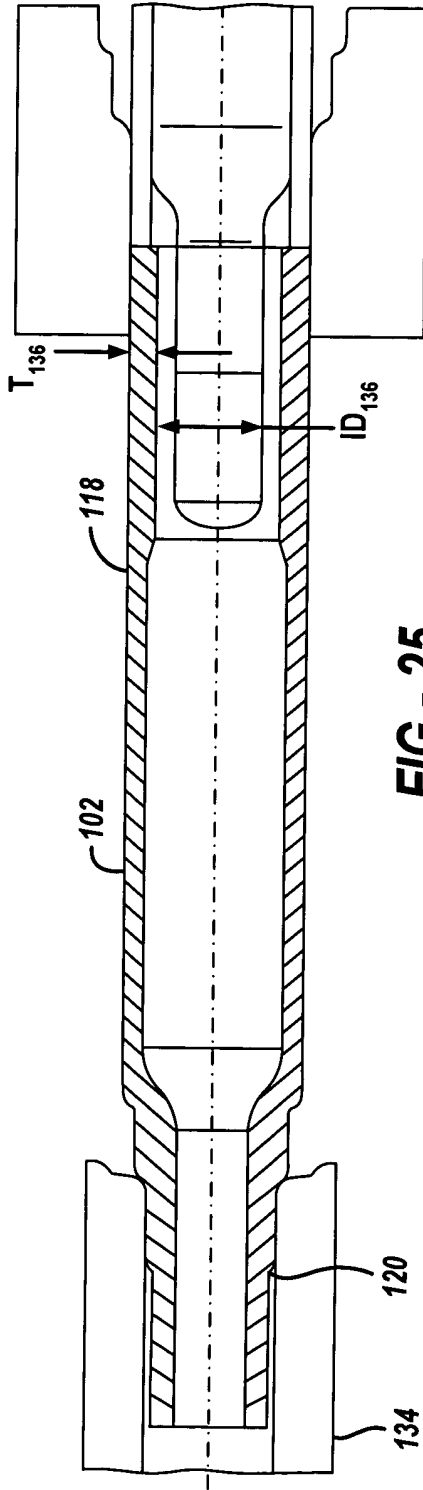


FIG - 25

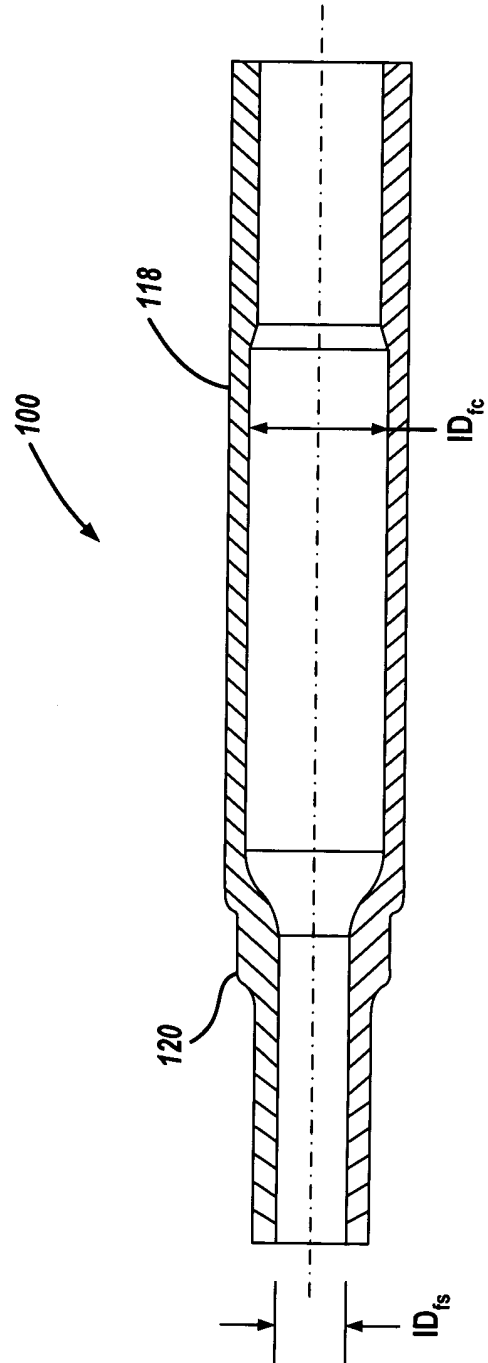


FIG - 26

FORGING

1. CNC rotary swage a thick walled tube into a single piece, variable wall, near-net / net shaped axle tube housing blank.

500

FIG - 27

WELDING

1. Press a weld flange (fine blanked with bolt holes) onto the axle tube housing blank and fusion weld in position.

620

2. Position and locate remaining axle tube brackets (spring seat, shock mount, etc.)

640

3. Straighten tube.

660

MACHINING

1. Face spindle end of tube.

680

2. Face and center rear end of tube (machining datum line is from rear centerline of tube and weld flange bolt holes).

720

3. Turn spindle.

740

4. Roll thread.

800

5. Finish grind bearing and seal surface, and cut keyway.

840

6. Wash, rustproof, package and ship.

860